

Covenant Deferral Request  
Oak Ridge National Laboratory  
Facilities Revitalization Project

March 2, 2001

U. S. Department of Energy  
Oak Ridge, Tennessee

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Introduction

The United States Department of Energy (DOE) is proposing to transfer portions of real property (hereinafter referred to as “the Property”) designated as the East and West Campuses at Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee, by deed and is submitting this Covenant Deferral Request (CDR) pursuant to § 120(h)(3)(C) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, (CERCLA) and applicable United States Environmental Protection Agency (EPA) guidance. The Oak Ridge Reservation (ORR), which includes ORNL, was placed on the National Priorities List (NPL) on November 21, 1989, and environmental investigation and cleanup activities are continuing at ORNL in accordance with CERCLA, the National Contingency Plan (NCP), and the Federal Facility Agreement (FFA).

This proposed land transfer is a key component of the ORNL Facilities Revitalization Project (FRP). Because of the magnitude of the needed facilities improvements and the limitations on federal funding availability, an innovative approach involving a combination of federal, private, and State of Tennessee funds has been developed to accomplish the facilities revitalization. DOE, using its authority under Section 161(g) of the Atomic Energy Act, proposes to transfer the land to a not-for-profit 501(c)(3) corporation established by UT-Battelle, LLC [DOE’s management and operating (M&O) contractor for ORNL]. The land would then be leased to the private sector for construction and then leased back to UT-Battelle (or a future DOE contractor for ORNL) for research activities in support of DOE’s mission.

As currently envisioned, approximately 9 acres of land are proposed for transfer from DOE to the 501(c)(3) corporation to accommodate the needed construction. Figure 1 contains the locations of the parcels proposed for transfer. This proposed transfer is the first of several that may be requested in support of the FRP. CDR’s will also be submitted for any additional proposed transfers as necessary. DOE would maintain the option to repurchase or retransfer of the land at some time in the future (expected to be 20 to 25 years). DOE would continue to be responsible for any legacy contamination found after the date of the transfer. The deed transferring the property contains numerous restrictions and prohibitions on the use of the Property.

CERCLA requires that when the federal government transfers property listed on the NPL the deed contain a covenant that all remedial actions necessary to protect human health and the environment from hazardous substances remaining on the property have been taken before the date of the property transfer. The deed also must contain a covenant warranting that any additional remedial action found to be necessary after the date of property transfer shall be conducted by the United States. However, in certain circumstances EPA, with concurrence of the Governor of the State in which the facility is located, may defer the CERCLA Covenant for parcels of real property at facilities on the NPL. In order for EPA to defer the covenant requirement in CERCLA § 120(h)(3)(A)(ii)(I), CERCLA § 120(h)(3)(C) requires that EPA determine that the property is suitable for transfer based on a finding that:

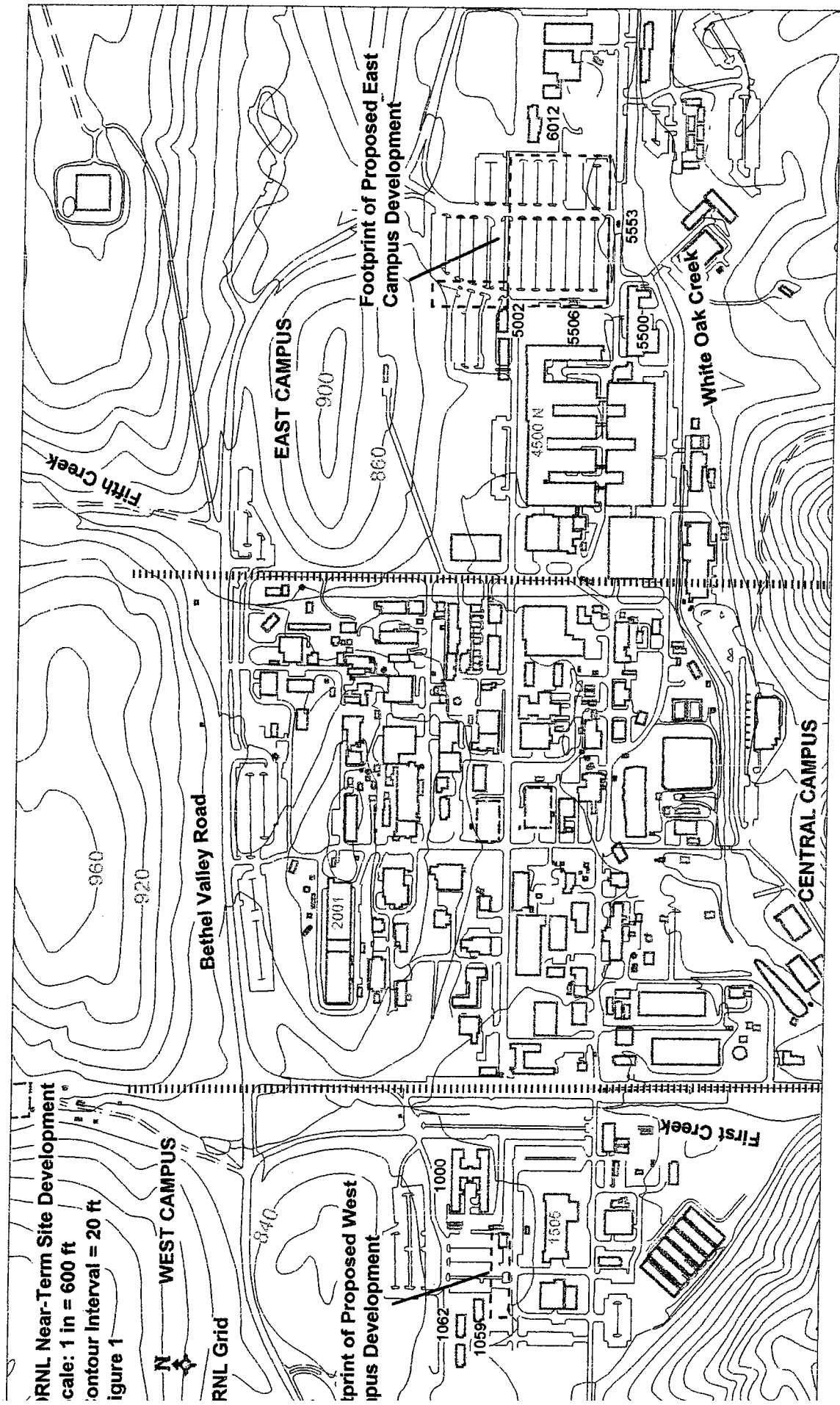


Figure 1. Locations of Parcels

1. The property is suitable for transfer for the expected use and such use is consistent with protection of human health and environment (see Section 3 of this CDR);
2. The deed or other agreement proposed to govern the transfer between the United States and the transferee of the property contains the Response Action Assurances described in this document;
3. The federal agency requesting deferral has provided notice, by publication in a newspaper of general circulation in the vicinity of the property, of the proposed transfer and of the opportunity for the public to submit, within a period of not less than 30 days after the date of notice, written comments on the suitability of the property for transfer; and
4. The deferral and the transfer of property will not substantially delay any necessary response action at the property.

These findings are intended to assure that there is a sound basis for the proposed transfer because the expected reuse of the property does not pose an unacceptable risk to human health or the environment. As stated in CERCLA § 120(h)(3)(C)(iv), all statutory obligations required of a federal agency remain the same, regardless of whether the property is transferred subject to a covenant deferral.

DOE hereby requests that the Regional Administrator for EPA Region 4 determine, with the concurrence of the Governor of the State of Tennessee, that the Property is suitable for transfer and that the CERCLA § 120(h)(3)(A)(ii)(I) covenant may be deferred. Once the deferral request is granted, DOE will proceed to convey the Property while DOE continues to complete all necessary remediation at the ORNL site in accordance with CERCLA, the NCP, and the FFA. In accordance with CERCLA § 120(h)(3)(B), this covenant deferral request pertains solely to the transfer of this Property or any portion thereof to a non-Potentially Responsible Party.

#### I. Property Description

ORNL is owned by the U. S. Government and is operated by UT-Battelle, LLC, for DOE. ORNL was one of three principal DOE facilities constructed during World War II as part of the Manhattan Project. ORNL's original mission was to produce and separate the first gram quantities of plutonium to support the national effort to develop the atomic bomb. Following completion of the Manhattan Project, ORNL became a national center for nuclear reactor technology development. Numerous radiochemical production and separation processes were developed and implemented at ORNL facilities. ORNL's current mission is to conduct applied research and engineering development in support of DOE programs in nuclear fusion and fission, energy conservation, fossil fuels, and other energy technologies. The laboratory also performs basic scientific research in selected areas of physical, life, and environmental sciences.

On November 21, 1989, ORNL was placed on the NPL by EPA due to environmental releases associated with past waste management practices and other onsite operations. The areas proposed for transfer were not associated with these activities. As a result of this listing, DOE, EPA, and TDEC signed an FFA for environmental restoration of the ORR, which includes ORNL. The FFA became effective on January 1, 1992. The FFA establishes enforceable schedules and deadlines for the performance and completion of environmental investigation and cleanup activities at ORNL. EPA Region 4, as lead agency, has worked with the Tennessee Department of Environment and Conservation (TDEC) to provide regulatory oversight of the investigation and remediation at ORNL.

The Property proposed for transfer by deed is approximately 9 acres within the Oak Ridge city limits within Roane County, Tennessee. The East Campus site is comprised of approximately 7 acres while the West Campus site is comprised of approximately 2 acres. The East and West Campuses are currently asphalt-paved parking lots or small open areas which are vegetated with various grasses and other small plants or trees. All ORNL property proposed for transfer has been under the ownership of DOE and its predecessor organizations since 1942. A legal description of the Property is described by the Boundary and Survey and site plan provided in Appendix A. Prior to the Federal government acquiring the land, the property was primarily used for farming.

## II. Nature/Extent of Contamination

The primary document reviewed in performing the environmental assessment of the parcels proposed for transfer was the *Remedial Investigation/Feasibility Study for Bethel Valley Watershed at Oak Ridge National Laboratory, Oak Ridge, Tennessee* (DOE/OR/01-1748/V1 and V2&D2 (RI/FS)). The main goal of the RI of Bethel Valley was to conduct field investigations to determine the types, distribution, and concentrations of contaminants in the environment and to identify exposure pathways. The breadth of potential areas of contamination in the Bethel Valley watershed necessitated dividing the area into more manageable units or subareas for descriptive purposes, known as Operable Units. The Bethel Valley RI completed characterization of seven subareas within the watershed. The subareas of concern for this CDR are the Central Bethel Valley 4000 Area and the West Bethel Valley Area.

Based on the review of the Bethel Valley Watershed RI/FS and an evaluation of additional data collected on historical and current site activities, all evidence indicates that hazardous substances have not been stored, released, or disposed of on the two parcels of land proposed for transfer.

An Interim Record of Decision (ROD) for the Bethel Valley Watershed is in the final stages of approval. This interim ROD will specify that no remedial action for soils is required for the parcels proposed for transfer. However, this interim ROD does not address final groundwater remediation. The groundwater under portions of the ORNL site is contaminated due to historical activities. Therefore, the land transfer will occur before all groundwater remediation is completed. Accordingly, the deed will contain restrictions on the extraction and use of groundwater by the development corporation. DOE will retain responsibility for any necessary future groundwater remediation. While the Interim ROD will contain limited measures designed to address groundwater contamination within portions of Bethel Valley, none of the measures are expected to impact groundwater beneath the East and West Campus properties. In order to ensure that all groundwater beneath Oak Ridge

National Laboratory is addressed by appropriate remedial measures, an additional ROD addressing all site groundwater is scheduled for CY 2013.

The schedule for implementation of remaining remedial requirements on the East and West campuses will be codified in an enforceable schedule commitment pursuant to the FFA.

As shown in Figure 2, a considerable amount of sampling has occurred in the East and West Campus areas. Sampling data associated with the proposed building footprints include:

- Forty-nine soil borings and subsurface excavations. No radiological contamination was detected.

Additional sampling data in the East and West Campus areas include:

- More than 200 soil, surface water, sediment, and groundwater sampling points were evaluated in the Bethel Valley RI/FS. No contaminant sources were attributable to the areas proposed for transfer.
- Eighty-five soil borings were monitored in the East Campus area (64 borings) and West Campus area (21 borings). No radiological contamination was detected.
- Recent foundation excavations in the west campus area adjacent to the proposed land transfer parcel were found to be free from radiological contamination.
- Routine monitoring associated with the ORNL National Pollutant Discharge Elimination System Permit at nearby outfalls does not indicate contamination sources in either of the two parcels proposed for transfer.
- Two Biological Monitoring and Abatement Program stream monitoring locations represent receiving streams from the East and West Campus areas. The associated data does not indicate chemical contamination from the areas proposed to be transferred.

Although CERCLA §120(h)(3)(C) does not require an environmental assessment of the land in the East and West Campuses, this Covenant Deferral Request utilizes the RI/FS and evaluates hazardous substance activity associated with the parcels proposed for transfer to provide additional information beyond that which is typical for a deferral request under Section 120(h)(3).

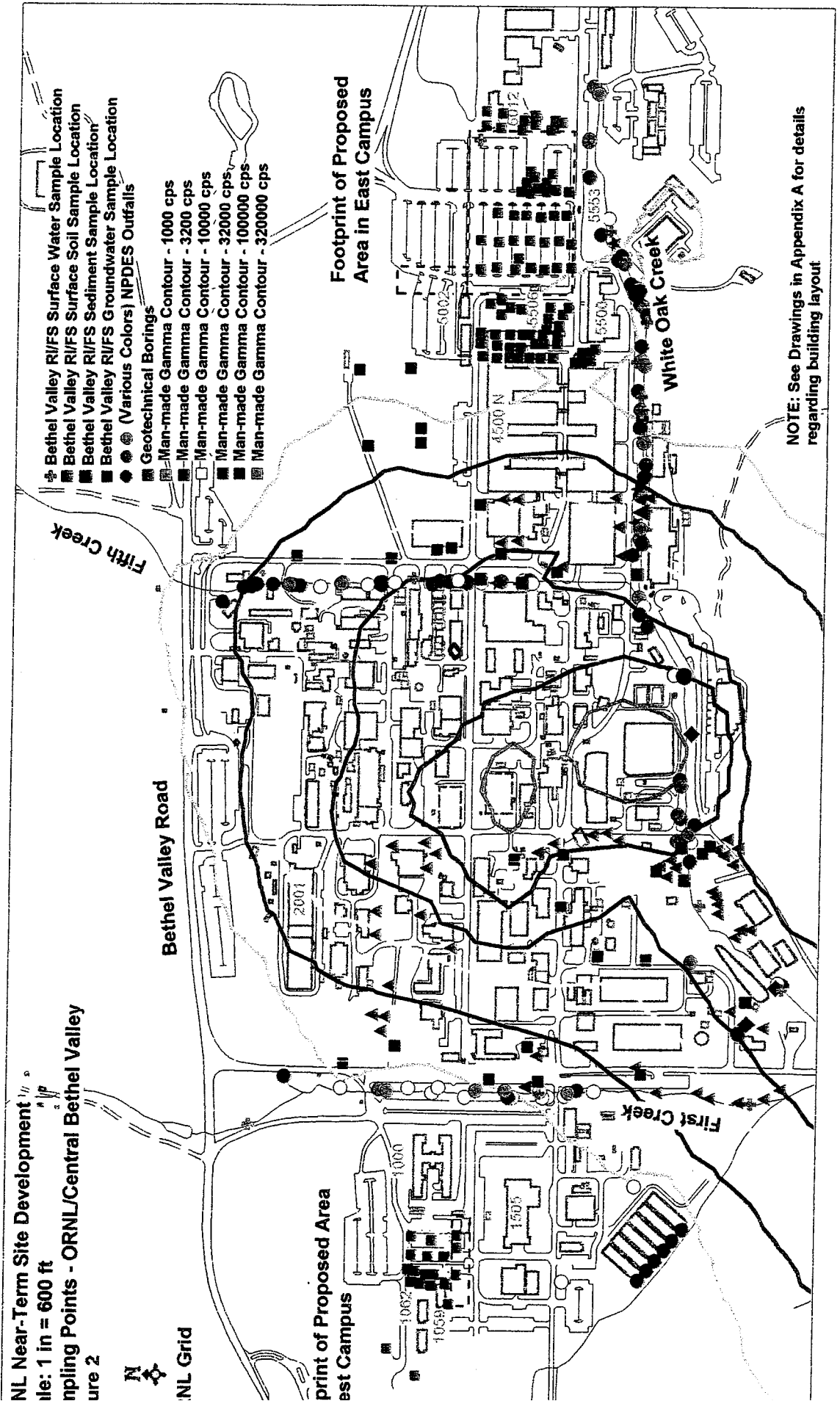


Figure 2. Sampling Locations

The following is a summary of additional data reviewed for the two parcels proposed for transfer.

1. Detailed DOE Records Search.

DOE records<sup>1</sup> were obtained and reviewed for this environmental assessment. The records that were reviewed did not indicate any hazardous substance activity (storage, disposal, or releases). Appendix B contains a complete list of the records reviewed.

2. Aerial photographs that may reflect prior uses of the real property

Aerial photographs for the following years were reviewed: 1942, 1952, 1969, 1974, 1981, 1984, 1987, 1993, 1998. A summary of the aerial photographs is included in Table 1. Copies of these photographs are found in Appendix C.

Aerial photographs were obtained from the Geographic Information Sciences and Technology Group within the ORNL Computational Physics and Engineering Division. The aerial photographs reviewed depict the different uses of the land which comprises the property which is to be transferred from 1942 to 1998. Aerial photographs taken in 1942 as part of the original survey of the property purchased for the Manhattan Project revealed agricultural uses of the two property areas in question. The photographs indicate that the properties were in cultivation, pasture, or fallow. Several small buildings can be seen in the photos. These buildings appear to be comprised of homes, barns, and other outbuildings. No evidence of storage, release, or disposal of hazardous substances is noted from review of the 1942 aerial photographs.

Table 1 Aerial Photograph Summary

GIST Notebook	Year	Collection Date	Collection Time	Scale	Acquisition Agency	Frame Roll
ORR Overview 1942 Flightlines 4-6	1942				USAEC	820-5-18
ORNL WAG 11 White Wing Scrap Yard	1952	30 Apr 52	1120	1:43200	TVA	130-2C-21
X-10 Vol III	1969	16 Mar 69	1244	1:24000	TVA	64498
X-10 Vol III	1974	19 Apr 74		1:32600	TVA	WB-3-100,401
X-10 Vol II	1981	25 Feb 81	1235	1:12000	TVA	2018-228

<sup>1</sup>Note that DOE records include records of current and past management and operating contractors, Environmental Restoration contractors, as well as current and past DOE (and predecessor agencies) records.

X-10 Vol II	1984	07 Mar 84	1253	1:24000	TVA	2141-134
X-10 Vol I	1987	26 Mar 87	1442 and 1500	1:12000 and 1:24000	TVA	2333-004 and 2334- 010
	1993	March 93			Piedmont Survey	--
	1998	March 98			Tuck Engineering	--

Low-altitude aerial and ground-level photographs<sup>2</sup> taken during World War II, and immediately thereafter, were reviewed. These photographs did not cover much of the area designated as the East and West Campuses. Most of the photographs concentrated on the area surrounding the Graphite Reactor and Building 3019. The few photographs of the areas designated as the East and West Campuses depicted open, cleared land. No evidence of storage, release, or disposal of hazardous substances was observed from the review of these photographs.

Review of high and low altitude aerial and ground-level photographs taken in the early 1950s through the middle 1950s indicate that construction on a large scale occurred within ORNL proper. Construction of Building 4500N can be seen in some of the early 1950s photographs and these photographs include the area comprising the East Campus. The area designated as the East Campus appeared to have been used as a construction lay down area during construction of 4500N. This area apparently was converted to parking after construction of Building 4500N. The area comprising the West Campus is shown to be open land. No evidence of storage, release, or disposal of hazardous substances was observed from the review of these photographs.

Low and high altitude aerial and ground-level photographs from the late 1950s through the 1990s show little or no change in the property which is proposed for transfer. The East Parking Lot has been somewhat expanded and buildings in the 6000 area are observable in these photographs. No evidence of storage, release, or disposal of hazardous substances was observed from the review of these photographs.

Aerial radiometric survey information was reviewed in addition to aerial photographs. Aerial radiometric information for the East and West Campus areas is found in a document entitled *Qualitative Change Analysis of Aerial Radiological Data of the Oak Ridge Reservation, Oak Ridge, Tennessee* (BJC/OR-106), September 1998 and in ORNL SDI MapInfo layers. Figure 9 in BJC/OR-106 shows that in 1997, both the East and West Campus footprints fall outside the lowest radiation levels measured (1000 count per second contour for man-made gamma radiation). The radiometric survey information in Figure 2 was generated from the

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<sup>2</sup>Photographs from 1944 to the mid-1960s are from the collection of S. H. Stow, ORNL Ombudsman, August 25, 2000.

SDI MapInfo layers displaying aerial radiometric levels<sup>3</sup>. No evidence of storage, release, or disposal of hazardous substances was observed from the review of this survey information.

3. A visual inspection of the real property and any buildings, structures, equipment, pipe, pipeline, or other improvements on the real property, and a visual inspection of properties immediately adjacent to the real property.

A visual inspection of the East Campus was performed on August 29, 2000. The property comprising the proposed East Campus site is comprised of asphalt-paved parking lot. Four special features within the footprint were observed and investigated. Feature 1 is the 150-meter Flight Path Station which is part of the Physics Division accelerator facilities in the Building 6000 area. Feature 2 is the 85-meter Flight Path Station which is also part of the Physics Division accelerator facilities. Feature 3 is Water Pit No. 14 which is part of the water distribution system for ORNL and is operated by the Plant & Equipment Division. Feature 4 is Water Pit No. 15 which is also part of the water distribution system for ORNL.

Per discussions with the Environmental Protection Officer for the Physics Division, the 85-meter Flight Path Station contains a small SOLA transformer and its attendant small capacitors.<sup>4</sup> No leaks or releases have been reported for the SOLA transformer or its capacitors. The 150-meter Flight Path Station contained a Resource Conservation and Recovery Act 90-day area for a time, but it was removed from service in December 1998. No releases from the 90-day area were reported. According to Plant & Equipment engineering personnel, the water pits contain no hazardous substances, but do contain greases. Oily residues were found in the parking lot. The oily residues are small and are from leaking car engines. None of the features mentioned herein are known to have stored or released<sup>5</sup> hazardous substances, or to have been used to dispose of hazardous substances.

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<sup>3</sup>EG&G Aerial Radiometric Survey Results, 1992 as displayed on various SDI MapInfo layers.

<sup>4</sup>The amount of insulating fluid and PCB concentrations are unknown; however the mass of PCB-laden fluid is thought to be less than the RQ for PCBs (1 lb). The capacitors are managed as PCB articles, by ORNL policy.

<sup>5</sup>Although these features are not known to have released hazardous substances, a water main break in April 1996 which occurred at the intersection of the exit of the East Parking Lot and Bethel Valley Road did release chlorinated water to the extent that it flooded a portion of the East Campus area proposed for transfer. The reportable quantity for chlorine was not exceeded as a result of the break.

In addition to the water main break, two spills of ethylene glycol occurred in the close proximity to the area designated as the East Campus. The first spill occurred when a chilling line leaked in September 1986. This spill occurred east of what is to become the East Campus, and there was no impact to the East Campus site. The spill followed existing contours from its source within the 6000 area discharging into White Oak Creek. Approximately 7800 gallons of chill water having a concentration of 5 percent (about 50000 ppm or mg/L) ethylene glycol was released in the spill. Although not impacting the designated East Campus site or property immediately adjacent to it, approximately 1474 kg (3243 lbs) of ethylene glycol was released into the environment. There was no RQ for ethylene glycol at the time of the release; however, at the reported concentration, the release would not have exceeded the current RQ for ethylene glycol (5000 lbs).

A visual inspection of the footprint of the West Campus real property proposed for transfer was performed on September 21, 2000. The property comprising the West Campus consists of open land and asphalt-paved parking lots. There were no features observed during the inspection indicating any hazardous substances are currently, or ever have been, stored, released, or disposed of on the property, outside of oily residues found in the parking lot. The oily residues are small and are from leaking car engines. One groundwater monitoring well is located near the West Campus parcel and there appears to be evidence of underground water lines, or other utilities, running through the area.

Discussions with ORNL Radiation Protection personnel<sup>6</sup> indicated that there are no areas of radiological contamination on the surface of either of the parcels proposed for transfer.

4. Physical inspection of property adjacent to the real property.

For the purposes of this environmental assessment, property adjacent to the real property proposed for transfer was defined as buildings and/or land located *immediately* adjacent to the real property which could have an adverse impact on the real property if hazardous substances were released into the environment. Note that the areas proposed for transfer are outside the boundaries set by the DOE Environmental Restoration Program for CERCLA remediation. Figure 1 contains the locations of the adjacent buildings inspected. The following buildings<sup>7</sup> adjacent to the East Campus site underwent a physical inspection: 5002, 5500, 5506, 5553, and 6012. The following buildings adjacent to the property slated to become the West Campus were inspected: 1000, 1059, and 1062.

One adjacent facility, Building 5500, currently uses CERCLA hazardous substances in amounts greater than the respective RQ. However, only lead was used in an amount greater than the 1,000 kg threshold specified in CERCLA §120(h)(3). These materials are used in support of various research projects and are managed appropriately by ORNL staff. There was no evidence of disposal or releases of these substances at Building 5500. There was no evidence of storage, release, or disposal of hazardous substances at the other adjacent facilities.

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The second spill was similar in nature to the first. It occurred in August 1987 in the area between Buildings 4500N, 4500S, and 5500. Likewise, the spill did not impact the area designated to become the East Campus. Approximately 1000 gallons of chill water having a concentration of 5 percent (about 50000 ppm or mg/L) ethylene glycol was released in the spill. Approximately 189 kg (417 lbs) of ethylene glycol was released in this spill. There was no RQ for ethylene glycol at the time of the release, however, at the reported concentration, the release would not have exceeded the current RQ for ethylene glycol (5000 lbs).

<sup>6</sup> ORNL Office of Radiation Protection, July 26, 2000.

<sup>7</sup>The land area around the buildings was also inspected.

5. Federal, state, or local government records of each adjacent facility related to hazardous substance releases or any petroleum product or its derivative, and which is likely to cause or contribute to a release or threatened release of any hazardous substances or any petroleum product or its derivative on the real property.

The City of Oak Ridge and State of Tennessee were contacted regarding past releases within, and adjacent to, the property designated as the East and West Campuses. Moreover, the Tennessee Valley Authority, U. S. Army Corps of Engineers, and the DOE Realty Office were contacted concerning past releases within and adjacent to property that is to be transferred. None of the foregoing had any information concerning past releases of hazardous substances on the property proposed for transfer or on adjacent property. Note that requests were made for information about the contamination status of the real property and adjacent properties prior to 1942. This was done because of the large amount of more recent information about contaminant distribution within ORNL from the reports mentioned herein.

6. Interviews with current or former employees involved in operations on the real property.

Interviews and/or phone conversations were conducted with employees, the City of Oak Ridge, the Tennessee Valley Authority, the Army Corps of Engineers, and TDEC to discuss hazardous substance storage, disposal, or releases involving the property to be transferred. These interviews/phone conversations did not indicate evidence of hazardous substance activity on the parcels to be transferred. Appendix D contains a complete list of individuals contacted.

7. Sampling

As discussed previously in this section, a considerable amount of sampling data is available for the areas proposed for transfer. This data indicates that the two parcels to be transferred have not stored, released, or disposed of hazardous substances.

8. Summary

The East and West Campuses are currently asphalt-paved parking lots or small open areas which are vegetated with various grasses and other small plants or trees. Many of the buildings within the adjacent area are office buildings or other facilities and are not sources of hazardous substances. Building 5500 is the only structure located adjacent to the East or West Campus which has hazardous substances stored in amounts greater than an RQ or 1,000 kg, but there are no records or anecdotal evidence indicating past or current releases of these substances into the environment from the building. The physical inspections, interviews, and resources reviewed reveal no evidence of any past or present storage, release, or disposal of hazardous substances or petroleum products within the areas comprising the East and West Campus sites.

### III. Analysis of Expected Future Use During Deferral Period

The Property is situated within an industrial facility (Research and Development Laboratory) on land that is owned by the Federal government. The Property (both East and West Campus sites) is either undeveloped land or used as parking facilities for ORNL, DOE, subcontractor employees and visitors. Adjacent property is used for multipurpose basic science research and development in the areas of high energy physics, materials and neutron science, chemistry, and environmental sciences.

The transfer of the Property is necessary to facilitate the DOE's Facility Revitalization Program for ORNL. The modernization plan includes 10 new facilities. Five of those facilities will be constructed on the Property that is the subject of this CDR. Additional CDRs may be needed in the future. Two of the five facilities will be built by the State of Tennessee. The state-funded facilities will be used to support research and development in areas of biological and computational sciences. The facilities will house light laboratories, offices and conference areas. Three of the five facilities to be constructed on the Property will be built by the private sector and leased back to DOE's management and operating contractor for ORNL. The facilities built by the private sector will support research and development in computational sciences and engineering technology. These facilities will house light laboratories, computer rooms, employee break areas, conference rooms and offices. Access to the facilities and areas surrounding the facilities will be controlled by DOE through physical (i.e., badge readers) and administrative (i.e., signs) controls. Groundwater below the Property will not be disturbed as part of the planned uses.

As mentioned in Section II, the areas proposed for transfer are not expected to have soil contamination. At the end of a pre-determined period of time (anticipated to be 20 - 25 years) DOE, through the deed, will retain the option to repurchase the property for continuation of mission needs. DOE would continue to be responsible for any legacy contamination found after the date of the transfer. The deed transferring the property contains numerous restrictions and prohibitions on the use of the Property. The grantee is prohibiting from using the property in a manner inconsistent with the Federal Facility Agreement between DOE, EPA-Region 4 and the Tennessee Department of Environment and Conservation (TDEC) and the Interim ROD for Bethel Valley. Further, the grantee is prohibited extracting, utilizing or consuming the groundwater below the Property.

The property proposed for transfer was not identified in the RI/FS as containing contaminants of concern (COCs). Areas where carcinogenic risks or noncarcinogenic hazards exceeded the EPA acceptable risk range were not located on the Property covered in this CDR. As a result, it is concluded that there are no unacceptable human health risks for future users of the Property, assuming continued industrial use. Refer to the RI/FS for the Bethel Valley Watershed at ORNL for additional information (DOE/OR/01-1748/V1&V2, 1999).

A human health risk assessment (HHRA) and an ecological risk assessment for ORNL (Bethel Valley facilities) was performed for the RI/FS of the Bethel Valley watershed (DOE/OR/01-1748 V1&D2, 1999). Risk exposure scenarios used to evaluate risk for Bethel Valley include industrial, recreational, and residential future land use scenarios. In the industrial scenario, industrial workers are assumed to have exposure to contaminated media within a commercial area or industrial site. The

exposure pathways evaluated for the future industrial exposure scenario for surface soil and sediment are incidental ingestion, inhalation of dust/particulates, dermal contact, and external exposure to radiation. For groundwater and surface water exposures, the ingestion pathways are evaluated for the future industrial scenario. Current contaminant concentrations were used for the calculation of future risk. The use of current concentrations generally defines the maximum exposure to Bethel Valley contaminants under these land use scenarios because the majority of risk-driving radionuclides will decay over time to lower concentrations. This is expected to abate releases to the Bethel Valley environment as sources are depleted.

The recreational land use scenario addresses exposure to people who spend a limited amount of time at or near the Bethel Valley watershed while engaging in outdoor activities such as fishing, hunting, and hiking. The recreational land use scenario is also referred to as the “trespasser” or “site visitor” scenario. For the recreational land use scenario, the exposure pathways evaluated for soil and sediment are incidental ingestion, inhalation of dust/particulates, dermal contact, and external exposure to radiation. For surface water and groundwater exposures, ingestion, inhalation, and dermal contact exposure pathways are evaluated for the recreational use scenario. Exposure recreational results are characterized without the fish ingestion pathway since the surface water site in Bethel Valley does not have sufficient flow to support the growth of fishable fish populations.

The residential scenario was judged to be an overly conservative scenario because it is unlikely in the near or foreseeable future that DOE will release land in Bethel Valley for residential development.

Therefore, based on the results of the HHRA, as long as the Property is not used for residential purposes, future use is not reasonably expected to result in exposure to CERCLA hazardous substances. Restrictions will be incorporated into the deed specifying that the Property use will be consistent with the Interim ROD. Specific information regarding the contents of the deed and prohibited uses are identified in Section VI of this CDR.

#### IV. Risk Analysis

##### **1. Human Health Risk Assessment**

Summarized below are the Human Health Risk Assessment (HHRA) results for Bethel Valley areas which contain the proposed East and West Campuses. For the RI, Bethel Valley area is divided into seven subareas. The subareas which include the proposed East and West campus locations are (1) Central Bethel Valley 4000 area and (2) West Bethel Valley, respectively. In the RI/FS, the East and West campus locations were not identified as containing COCs. Therefore, the HHRA results summarized below are attributed only to the Bethel Valley areas adjacent to the East and West campus proposed land transfer parcels. Unlike the proposed land transfer parcels, these adjacent areas contain COCs, meaning the associated risks most likely are much higher than the risks that would be expected to be associated with the CDR areas.

For the future site use, an industrial worker scenario and a recreational use scenario were quantitatively evaluated. Tables 2 and 3 summarize the HHRA results associated with the areas which contain the proposed East Campus site (4000 area) and the West Campus site (West Bethel Valley),

respectively. It is important to note that the risk estimates may represent aggregate risks for the given subarea rather than for specific areas. No surface contamination is expected to be found in the East and West Campus areas. Where possible, carcinogenic risks and noncarcinogenic hazards for the specific adjacent properties are presented.

**Proposed East Campus (4000 Area).** Most of the contaminants in the Central Bethel Valley (CBV) 4000 area are in buildings, tanks shells, or in subsurface soils. As shown in Table 2, the risk result for the industrial use scenario for soil was  $2E-4$ ; however, this was an aggregate risk result for the CBV 4000 Area. The risk results were calculated for 15 of the individual soil locations and only 4 of those locations exceeded a  $1E-4$  risk based on the industrial worker scenario--none of these 4 locations were on or adjacent to the proposed East Campus site. For groundwater, the aggregate risk result for the industrial use scenario exceeded  $1E-4$ . Only one individual location, Corehole 33, presented an unacceptable carcinogenic risk ( $>1E-4$ ) to an industrial worker. This groundwater location is not on the proposed East Campus location. No unacceptable risk or hazard was identified in surface water or sediment in the Central Bethel Valley 4000 Area based on the industrial worker or recreational use scenario.

**Table 2. Health Risk Assessment Results for Properties Adjacent to the East Campus**

Location/Exposure Media	Industrial Use Scenario		Recreational Use Scenario		Reference (RI/FS,1999)
Central Bethel Valley 4000 Area	Cancer Risk <sup>1</sup>	Noncancer Hazard <sup>2</sup>	Cancer Risk	Noncancer Hazard	
Soil	$2.0E-4^3$	$1.7E-1$	$2.7E-5$	$5.3E-2$	Table 5.60, p. 5-300, and pp. C-121- C-122.
Sediment	$<1E-4$	$< 1$	$< 1E-4$	$<1$	Table 5-63, p. 5-300, and pp. C-122 - C-123.
Surface Water	$< 1E-4$	$< 1$	$<1E-4$	$< 1$	p. 5-300
Groundwater	$2.0E-4^3$	$3.5E-1$	$<1E-4$	$< 1$	Table 5.64, pp. 5-300 - 5-308, and pp. C-124 - C-125.

1. An acceptable carcinogenic risk range according to EPA is  $1E-6$  to  $1E-4$ .
2. The acceptable noncarcinogenic hazard is equivalent to a Hazard Index value of 1 or less.
3. Aggregate risk for the CBV 4000 area. No sample locations with a cancer risk of  $> 1E-4$  are located on the East Campus area.

***Proposed West Campus (West Bethel Valley).*** The West Bethel Valley (WBV) area encompasses about 315 acres between the western end of the ORNL main plant and state Highway 95 at the western boundary of the White Oak Creek watershed. The WBV includes an number of waste areas [such as Solid Waste Storage Area 3, Contractors Landfill, and the CSMA (formerly known as WAG 3)]. The proposed West Campus area is located adjacent to Building 1000 in the current parking area. With the exception of the soil exposure route, for both the industrial and recreational use scenario, all carcinogenic risks are  $< 1\text{E-}4$  and the noncarcinogenic hazards are less than unity, as shown in Table 3. The soil sample locations which resulted in carcinogenic risks  $> 1\text{E-}4$  were primarily located on or adjacent to the waste sites and along First Creek. None of these sampling locations are on or adjacent to the West Campus area. For the recreational groundwater noncarcinogenic hazard there was one groundwater location near the proposed West Campus location (0533). The noncarcinogenic hazard value at this location was less than one.

**Table 3. Health Risk Assessment Results for Properties Adjacent to the West Campus**

Location/Exposure Media	Industrial Use Scenario		Recreational Use Scenario		Reference (RI/FS,1999)
West Bethel Valley	Cancer Risk <sup>1</sup>	Noncancer Hazard <sup>2</sup>	Cancer Risk	Noncancer Hazard	
Soil	$>1\text{E-}4^3$	$< 1$	$>1\text{E-}4^3$	$< 1$	Figure 5.8, p. 5-45 and Table 5.11, p. 5-65; pp. C-86-C-87; Tables C.26 - C.31.
Sediment	$2.6\text{E-}7$	$< 1$	$1.2\text{E-}8$	$< 1$	Table 5.14, p. 5-73, and p. C-88.
Surface Water	$< 1\text{E-}4$	$< 1$	$<1\text{E-}4$	$< 1$	Table 5.13, p. 5-72 and p. C-89.
Groundwater	$7.1\text{E-}5$	0.24	$<1\text{E-}4$	0.23	Fig 5.9, p. 5-47 and Table 5.15, p. 5-74; and pp. C-90 - C-92, Table C.57.

1. An acceptable carcinogenic risk range according to EPA is  $1\text{E-}6$  to  $1\text{E-}4$ .
2. The acceptable noncarcinogenic hazard is equivalent to a Hazard Index value of 1 or less.
3. Risk values are primarily associated with waste sites and First Creek. No samples taken on or adjacent to the West Campus area.

## **2. Ecologic Risk Assessment**

A Baseline Ecological Risk Assessment (BERA) was conducted for the RI/FS. The BERA presents an analysis of the risks to various ecological receptors in the Bethel Valley area. The BERA was organized in terms of the standard EPA framework (EPA/630/R-92/001, EPA 1992) and follows the strategy and guidelines developed for ORR assessments (Suter et al., 1995; Suter 1996). Representative receptors from the aquatic and terrestrial ecosystem were selected, along with appropriate assessment and measurement endpoints. The aquatic organisms include the fish community, benthic invertebrate community, and piscivorous wildlife. Terrestrial organisms include piscivorous and terrestrial wildlife species and the terrestrial plant community.

Effects on aquatic organisms appear in First Creek and in White Oak Creek from the 4000 area down to the 2000 area. The Northwest Tributary, and White Oak Creek upstream from the main plant area appear relatively unimpacted (p. 368 of Appendix D, RI/FS). No risks to aquatic organisms from exposure to radionuclides are expected. Estimated radiation doses to fish and invertebrates were below recommended dose rate limits at all stations.

While there appear to be potential risks to terrestrial organisms exposed to contaminants in WBV, these risks are not widespread. Potential soil invertebrate risks were identified at only one station in WBV, while potential risks to plants were identified in nine locations. These locations were not located on or adjacent to the parcels to be transferred.

Risks to piscivorous wildlife appear to be from exposure to mercury and selenium in the White Oak Creek system. Risks from exposure of piscivorous wildlife to radionuclides are not anticipated in Bethel Valley. Estimated exposures were below recommended dose rate limits for all receptors at all stations in White Oak Creek and its tributaries (p.370 of Appendix D, RI/FS). Fish from the Northwest Tributary appear to have contributed to the watershed-wide risks from mercury.

Based on evaluation of the BERA, there appears to be low potential adverse ecological risks for the parcels proposed for transfer.

### **Risk Analysis Summary**

The RI/FS for Bethel Valley was reviewed and risk assessment information summarized for areas adjacent to the proposed East and West Campus sites. The overall finding from review of the RI/FS is as follows: Areas where carcinogenic risks or noncarcinogenic hazards exceeded the EPA acceptable risk range were not located on or adjacent to the Property covered in this CDR. As a result, it is concluded that there are no unacceptable human health risks for future users of the Property, assuming continued industrial use.

## **V. Response/Corrective Action and Operation and Maintenance Requirements**

An Interim Record of Decision (ROD) for the Bethel Valley Watershed is in the final stages of approval. This interim ROD will specify that no remedial action for soils is required for the parcels

proposed for transfer. However, this interim ROD does not address final groundwater remediation. The groundwater under portions of the ORNL site is contaminated due to historical activities. Therefore, the land transfer will occur before all groundwater remediation is completed. Accordingly, the deed will contain restrictions on the extraction and use of groundwater by the development corporation. DOE will retain responsibility for any necessary future groundwater remediation. While the Interim ROD will contain limited measures designed to address groundwater contamination within portions of Bethel Valley, none of the measures are expected to impact groundwater beneath the East and West Campus properties. In order to ensure that all groundwater beneath Oak Ridge National Laboratory is addressed by appropriate remedial measures, an additional ROD addressing all site groundwater is scheduled for CY 2013.

The schedule for implementation of remaining remedial requirements on the East and West campuses will be codified in an enforceable schedule commitment pursuant to the FFA.

#### VI. Contents of Deed/Transfer Agreement

As required by CERCLA § 120(h)(3), DOE shall include the following language in the deed or transfer agreement, as appropriate.

A. In accordance with CERCLA Section 120(h)(3)(A)(i) and 40 CFR § 373, notice is provided that, based upon a complete search of agency files, the attached summary table (Exhibit A) provides notice of: (1) the type and quantity of hazardous substances that were known to have been released or disposed of or stored for one year or more on the property; (2) the date such storage, release or disposal took place; and (3) a description of remedial action taken, if any.

B. Grantor warrants that it shall take any additional response action found to be necessary after the date of this conveyance regarding hazardous substances located on the property on the date of this conveyance. This covenant shall not apply in any case in which: (1) Grantee or any successor in interest to the property of part thereof is a potentially responsible party (PRP) with respect to the property; or (2) any additional response action found to be necessary is the result of an act or failure to act of the Grantee, its successors, or any party in possession after the date of this conveyance that: (a) results in a release of a hazardous substance that was not located on the property on the date of this conveyance; or (b) exacerbates the release of a hazardous substance, the existence of which was known and identified to the applicable regulatory authorities as of the date of this conveyance. For purposes of this covenant, Grantee and its successors shall not be considered a PRP with respect to the property solely due to the purchase or ownership of the property or part thereof that is effective with or subsequent to the execution of this deed.

C. Grantor reserves a right of access to all portions of the property for environmental investigation, remediation or other corrective action. In the event the Grantor must access the property, the Grantor must provide notice to and coordinate access with the Grantee or its successors and any authorized occupants of the property. Any such entry, including such activities, responses or remedial actions, shall be coordinated with the Grantee or its successors, assigns, and tenants and shall be performed in a manner which minimizes, to the extent practicable, interruption with Grantee's

activities on the property. Grantor's right to access the property shall be exercisable in any case in which a remedial action, response action or corrective action is found to be necessary by the applicable regulatory authority after the date of conveyance of the property, or in which Grantor determines access is necessary to carry out a remedial action, response action, or corrective action on adjoining property. Pursuant to this reservation, the United States and its officers, agents, employees, contractors and subcontractors shall have the right (upon reasonable notice to and coordination with the Grantee or the then-owner and any authorized occupant of the property) to enter upon the property and (1) conduct investigations and surveys, including but not limited to drilling, test-pitting, borings, data and record compilation, and other activities related to environmental investigation and (2) to carry out any other response and/or corrective actions as required or necessary under CERCLA and other applicable authorities, including but not limited to installation and operation of monitoring wells and pumping wells, and conducting treatment required under CERCLA and other applicable authorities.

D. The Grantee covenants and agrees for itself, its successors and assigns and every successor in interest to the property or part thereof, that it shall not construct or permit to be constructed any well, and shall not extract, utilize, consume or permit to be extracted, any water from the aquifer below the surface of the ground within the boundary of the property for the purpose of human consumption, or other use, unless such groundwater has been tested and found to meet applicable standards for human consumption, or such other use, and such Grantee or occupant shall first have obtained written approval of the Grantor and the applicable regulatory authorities. The costs associated with obtaining use of such water, including but not limited to the costs of permits, studies, analysis, or remediation, shall be the sole responsibility of the Grantee, its successors and assigns, without any cost whatsoever to the Grantor.

E. The Grantee covenants and agrees for itself, its successors and assigns and every successor in interest to the property, or part thereof, that the property shall not be used or developed in a manner inconsistent with the FFA and the land use assumptions set forth in the Bethel Valley Interim Record of Decision.

F. In the event the Grantee or any successor or assign desires to use or take action on the property for any use or conduct proscribed in paragraphs D. and E. above, then Grantee or its successors or assigns shall perform all additional environmental remediation required by law and applicable regulatory authorities for such uses and shall further comply with all laws, rules, regulations and ordinances pertaining thereto, including but not limited to applicable zoning requirements. All costs associated with any such additional environmental remediation necessary for such proscribed conduct or use shall be the sole responsibility of the Grantee, its successors and assigns, without cost whatsoever to the Grantor.

G. The Grantee covenants and agrees for itself, its successors and assigns and every successor in interest to the property, or part thereof, that a party occupying the property shall not disrupt or prevent the Grantor from required remedial investigations, response actions, or oversight activities, including, but not limited to, properly constructing, upgrading, operating, maintaining and monitoring

any groundwater treatment facilities or groundwater monitoring on the property or adjoining property.

H. After notice and coordination with the Grantee as set forth in paragraph C. above, any response actions taken by the Grantor will be in accordance with schedules established in the Federal Facility Agreement (FFA) for the Oak Ridge Reservation as cited in Condition No. 18 of this Quitclaim Deed and the *Record of Decision for Interim Actions for the Bethel Valley Watershed at Oak Ridge National Laboratory, Oak Ridge, Tennessee*, approved by the Grantor, Region 4 of the Environmental Protection Agency, and the Tennessee Department of Environment and Conservation.

I. The Grantor shall submit on an annual basis, through established channels, appropriate budget requests to the Director of the Office of Management and Budget that adequately address those agreed-upon schedules for investigation and completion of all necessary response actions required by the FFA. The actual amount available for such activities is subject to congressional authorizations and appropriations.

J. When all response actions necessary to protect human health and the environment with respect to any substance remaining on the property on the date of transfer have been taken, the United States shall execute and deliver to the transferee an appropriate document containing a warranty that all such response actions have been taken.

VII. Responsiveness Summary (After newspaper ad)

During the public comment period, DOE received \_\_\_ letters from the public.....

VIII. Transferee Response Action Assurance and Agreements

The transferee is UT-Battelle Development Corporation. DOE does not contemplate that the Transferee will assume any response actions at the ORNL site unless the transferee uses the land in a manner inconsistent with the land use restrictions in the Interim ROD. If this should change, DOE shall provide the EPA and TDEC with all agreements, assurances, and other documents signed by the Transferee demonstrating that the Transferee is legally obligated to conduct the required response actions. As discussed in Section VI., no development activities will be inconsistent with (or interfere with) the remedial actions selected under the Interim ROD. The use of the transferred areas will be restricted consistent with land use assumptions and remedial actions selected under the Interim ROD. The transferee is prohibited from utilizing, consuming or extracting any groundwater within the boundary of the Property.

IX. Effect of Covenant Deferral Request

Nothing in this CDR shall be construed to alter DOE's or any PRP's obligation to complete all necessary response actions at the ORNL site as required by CERCLA and the NCP. In accordance with CERCLA § 120(h)(3)(B), this covenant deferral request pertains solely to the transfer of this Property or any portion thereof to a non-PRP.

## Appendix A - Boundary, Survey, and Site Plan

Metes and Bounds Description  
Environmental Assessment Area  
for Proposed  
Buildings on the  
East Campus at ORNL  
Oak Ridge, Tennessee

Beginning at a point located at the northeast corner of the proposed site perimeter, said point being located at ORNL (X-10) GRID position N-22,113.35, E-33,733.45 and being further located 68 feet northwest more or less from the northwest corner of Building 6012;

Thence with the proposed site perimeter south, 424.69 feet to a point;

Thence continuing west, 670.07 feet to a point;

Thence continuing north, 280.38 feet to a point;

Thence continuing west, 35.96 feet to a point;

Thence continuing north, 8.27 feet to a point;

Thence continuing east, 7.97 feet to a point;

Thence continuing north, 136.04 feet to a point;

Thence continuing east, 21.98 feet to a point;

Thence continuing north, 355.4 feet to a point;

Thence continuing east, 211.34 feet to a point;

Thence continuing south, 355.34 feet to a point;

Thence continuing east, 464.74 feet to the point of Beginning and containing 8.35 acres more or less. Bearings and distances are based on the ORNL (X-10) GRID System.

Prepared By: Barge, Waggoner, Sumner and Cannon, Inc.

Date: January 19, 2001

BWSC File No. 14964-34

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Keith E. Craft, TN RLS No. 509

Metes and Bounds Description  
Environmental Assessment Area  
for Proposed  
Joint Institute of Biological Science  
West Campus at ORNL  
Oak Ridge, Tennessee

Beginning at a point located at the northeast corner of the proposed site perimeter, said point being located at ORNL (X-10) GRID position N-22,145.01, E-29,121.95 and being further located 52 feet west more or less from the southwest corner of Building 1000;

Thence with the proposed site perimeter south, 77.84 feet to a point;

Thence continuing west, 30.9 feet to a point;

Thence continuing south, 11.63 feet to a point;

Thence continuing west, 424.24 feet to a point;

Thence continuing north, 89.47 feet to a point;

Thence continuing east, 455.14 feet to the point of Beginning and containing 0.93 acres more or less.

Bearings and distances are based on the ORNL (X-10) GRID System.

Prepared By: Barge, Waggoner, Sumner and Cannon, Inc.  
Date: January 19, 2001  
BWSC File No. 14964-34

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Keith E. Craft, TN RLS No. 509

## Appendix B - Records Reviewed

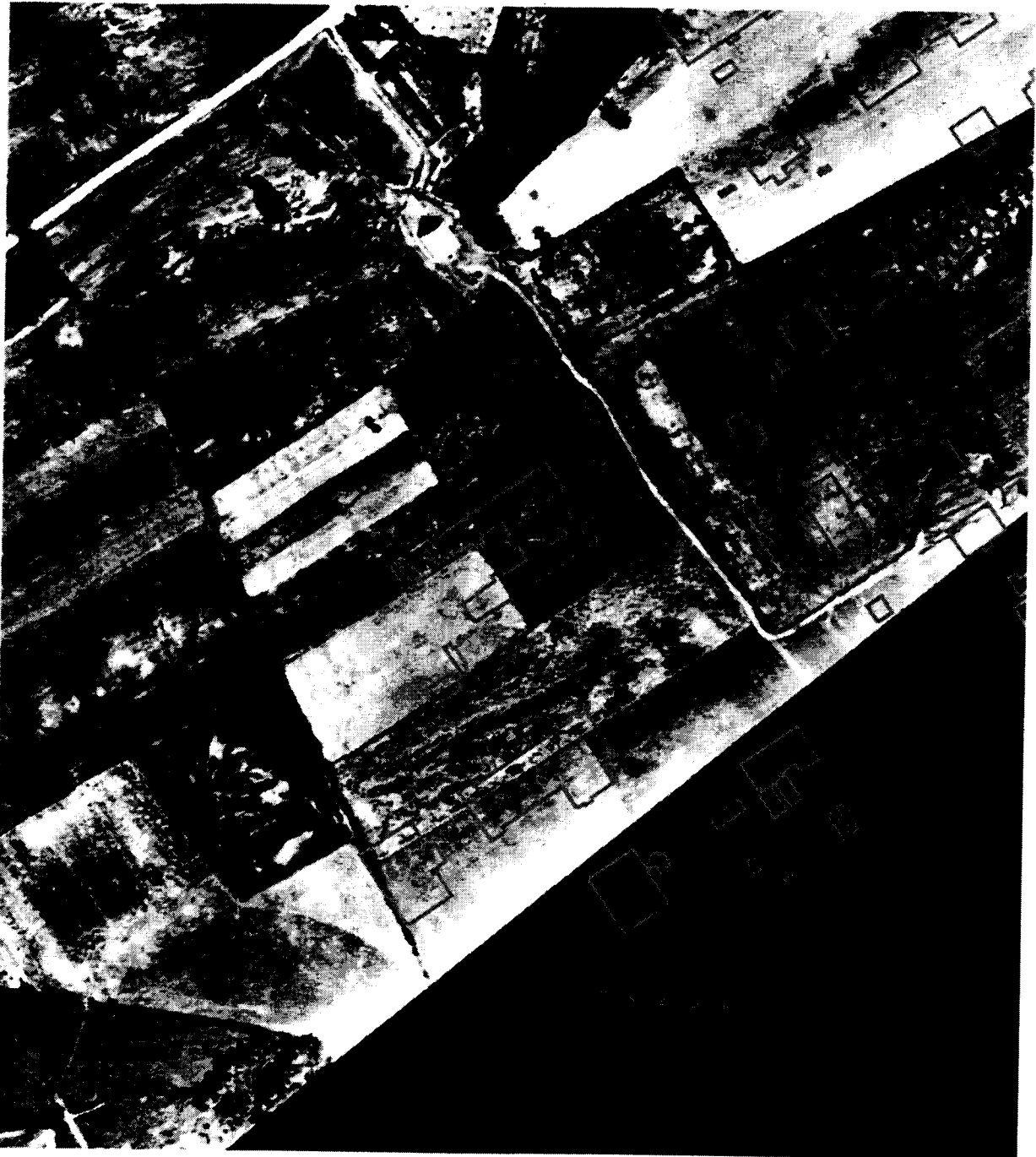
1. *RCRA Facilities Assessment (RFA) - Oak Ridge National Laboratory* (ORNL/RAP-12/V1 and V4)
2. *CERCLA Phase I Report: Identification and Preliminary Assessment of Inactive Hazardous Waste Disposal Sites and Other Contaminated Areas at ORNL* (ORNL/TM-9989)
3. *Remedial Investigation/Feasibility Study for Bethel Valley Watershed at Oak Ridge National Laboratory, Oak Ridge, Tennessee, Volumes 1 and 2* (DOE/OR/01-1748/V1 and V2&D2)
4. *Site Characterization Summary Report for Waste Area Grouping 1 at Oak Ridge National Laboratory, Oak Ridge, Tennessee* (DOE/OR-1043/Various Volumes&D1)
5. Oak Ridge Environmental Information System (OREIS) database
6. *Oak Ridge Reservation - Annual Site Environmental Report* (1995 through 1998)
7. Records of the Solid and Hazardous Waste Compliance Group, Environmental Protection and Waste Services Division (EPWSD), Oak Ridge National Laboratory (ORNL)
8. Records of the Water Programs Group, EPWSD, ORNL
9. Records of the DOE Compliance Programs Group, Environmental Protection and Waste Services Division, ORNL
10. ORNL Hazardous Materials Information System (HMIS) database
11. Radiological Source Control Database, Office of Radiological Protection (ORP), ORNL
12. Records of DOE Realty Office
13. Records of the following ORNL Division Environmental Protection Officers (EPO) and/or Radiological Control Officers (RCO) - Plant and Equipment, Laboratory Protection, Life Sciences, Physics, Metals and Ceramics, Engineering, Physical and Computational Sciences, and Science Education
14. ORNL Occurrence Reporting Database - Issues Management and Support Services

Section, Quality Services Division, ORNL

15. ORNL Shared Data Initiative (SDI) MapInfo database and work spaces
16. *Qualitative Change Analysis of Aerial Radiological Data of the Oak Ridge Reservation, Oak Ridge, Tennessee* (BJC/OR-106), September 1998
17. Geographic Information System records of the Geographic Information Science and Technology Group, Computational Physics and Engineering Division, ORNL
18. Records and photographs of the ORNL Ombudsman, S. H. Stow (erstwhile ORNL "historian").

## Appendix C - Aerial Photographs of ORNL

# ORNL West End 1942 Image with 1993 Buildings and Roads



0 500 1000 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 15, 2000



# ORNL West End 1952 Image with 1993 Buildings and Roads



0 500 1000 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 15, 2000



# ORNL West End 1969 Image with 1993 Buildings and Roads



0 500 1000 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 15, 2000



# **ORNL West End 1974 Image with 1993 Buildings and Roads**

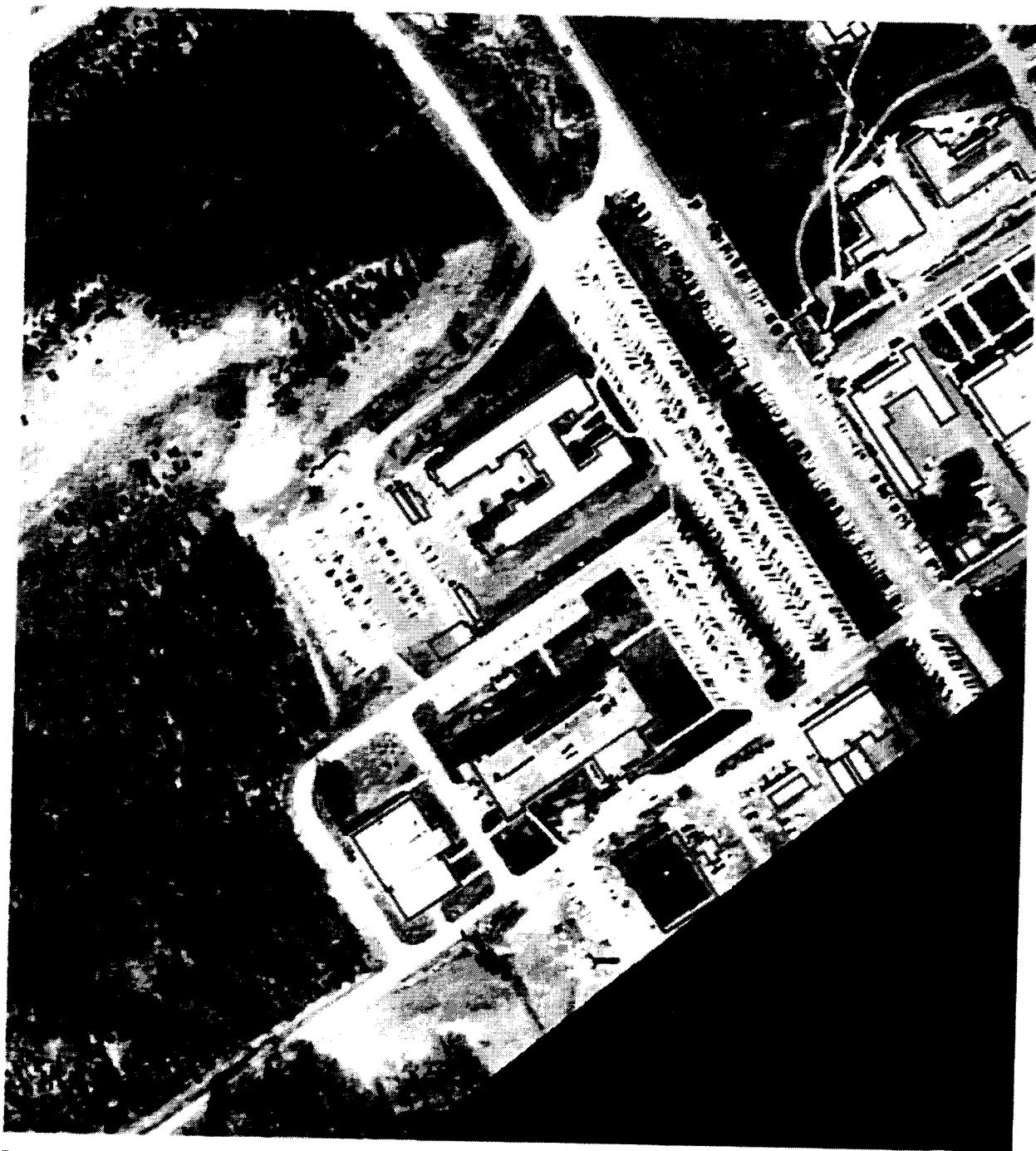


0 500 1000 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 15, 2000



# **ORNL West End 1981 Image with 1993 Buildings and Roads**



0 500 1000 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 15, 2000



# ORNL West End 1984 Image with 1993 Buildings and Roads



0 500 1000 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 15, 2000



# ORNL West End 1987 Image with 1993 Buildings and Roads

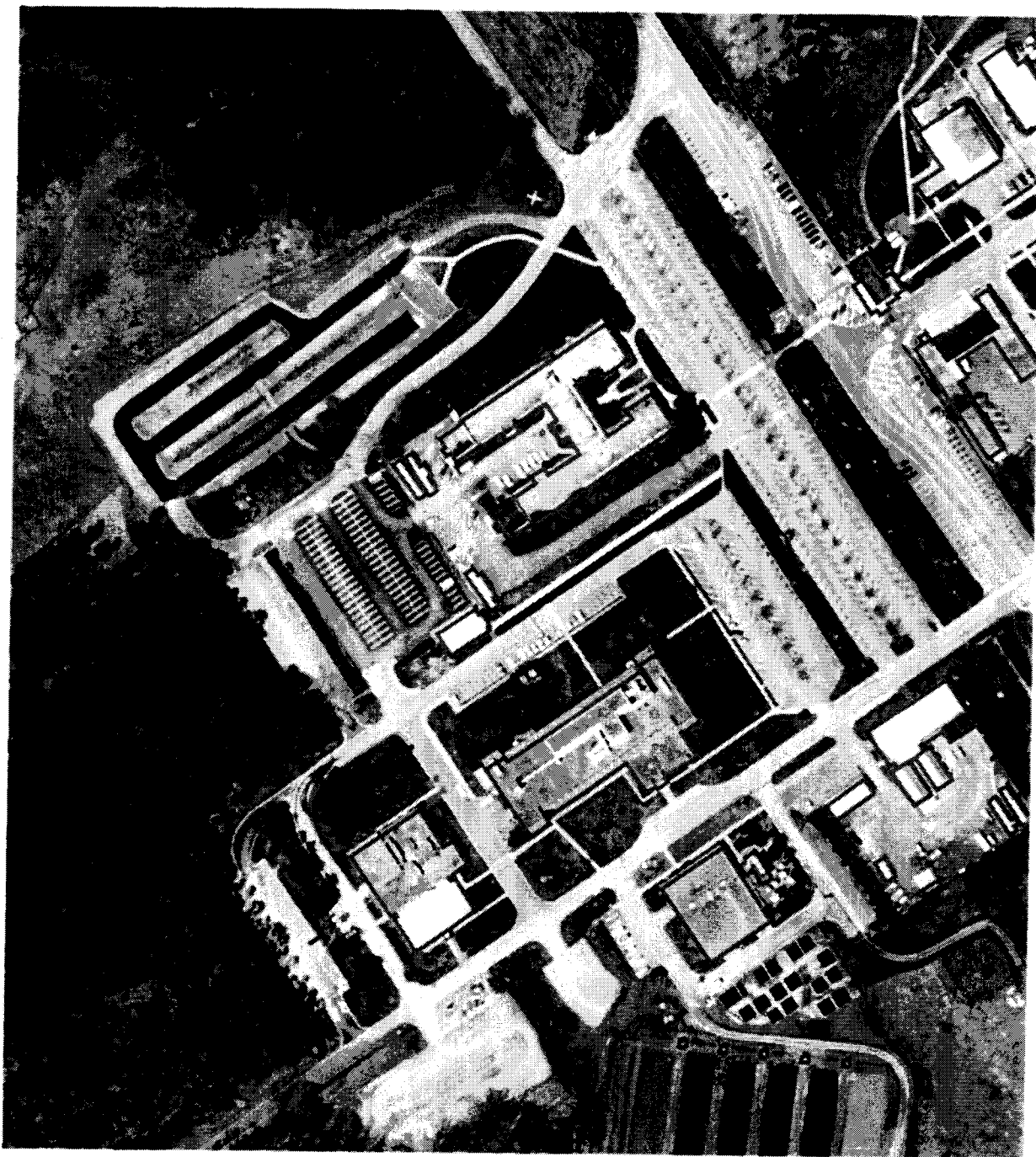


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Prepared by Geographic Information Science and Technology Group, ORNL  
August 15, 2000



# ORNL West End 1993 Image, Buildings, and Roads

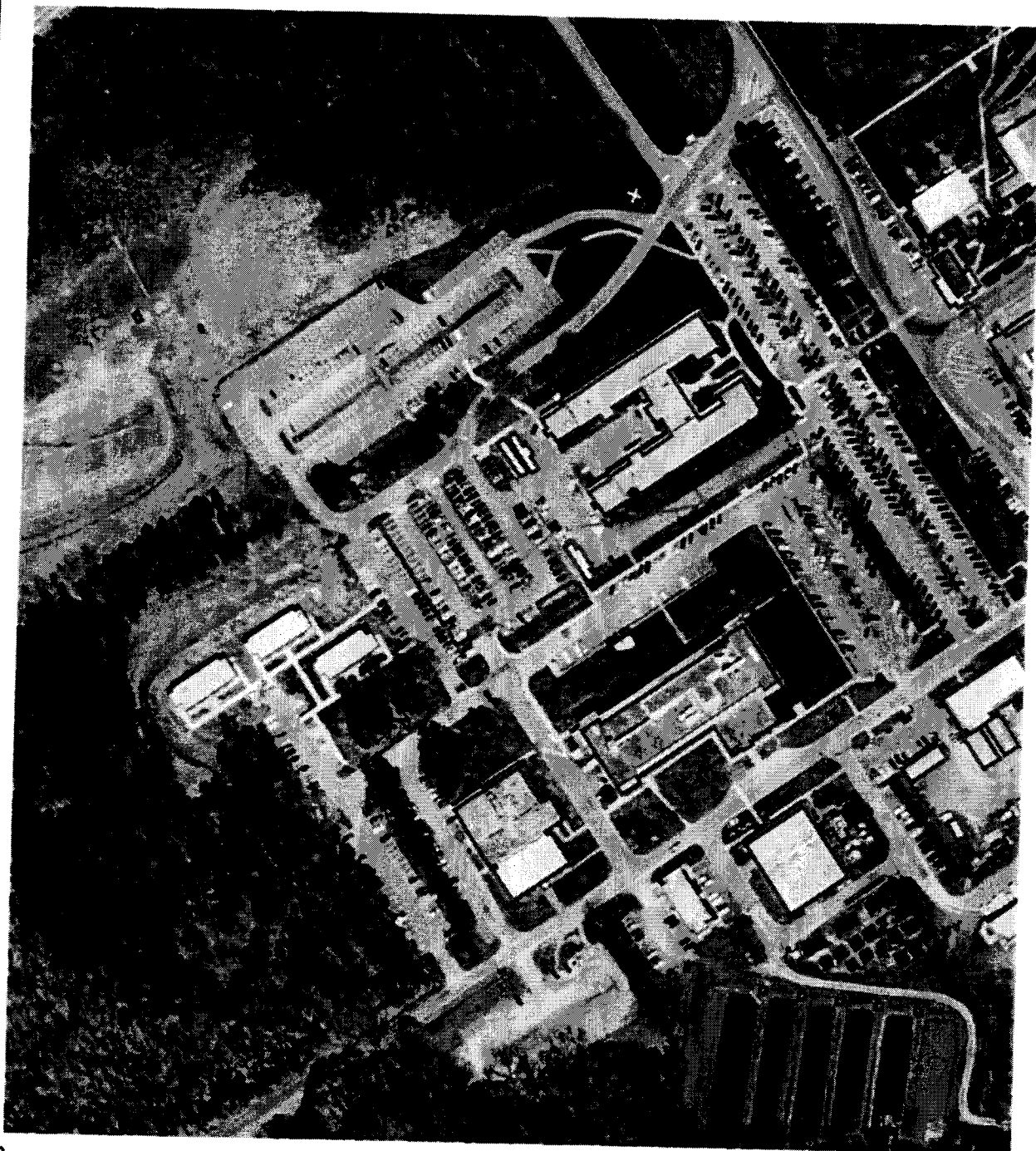


0 500 1000 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



# ORNL West End 1998 Image with 1993 Buildings and Roads



0 500 1000 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 15, 2000



# ORNL 4500 Complex 1942 Image with 1993 Buildings and Roads



0 500 1000 1500 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



# ORNL 4500 Complex 1952 Image with 1993 Buildings and Roads



0 500 1000 1500 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



# **ORNL 4500 Complex 1969 Image with 1993 Buildings and Roads**

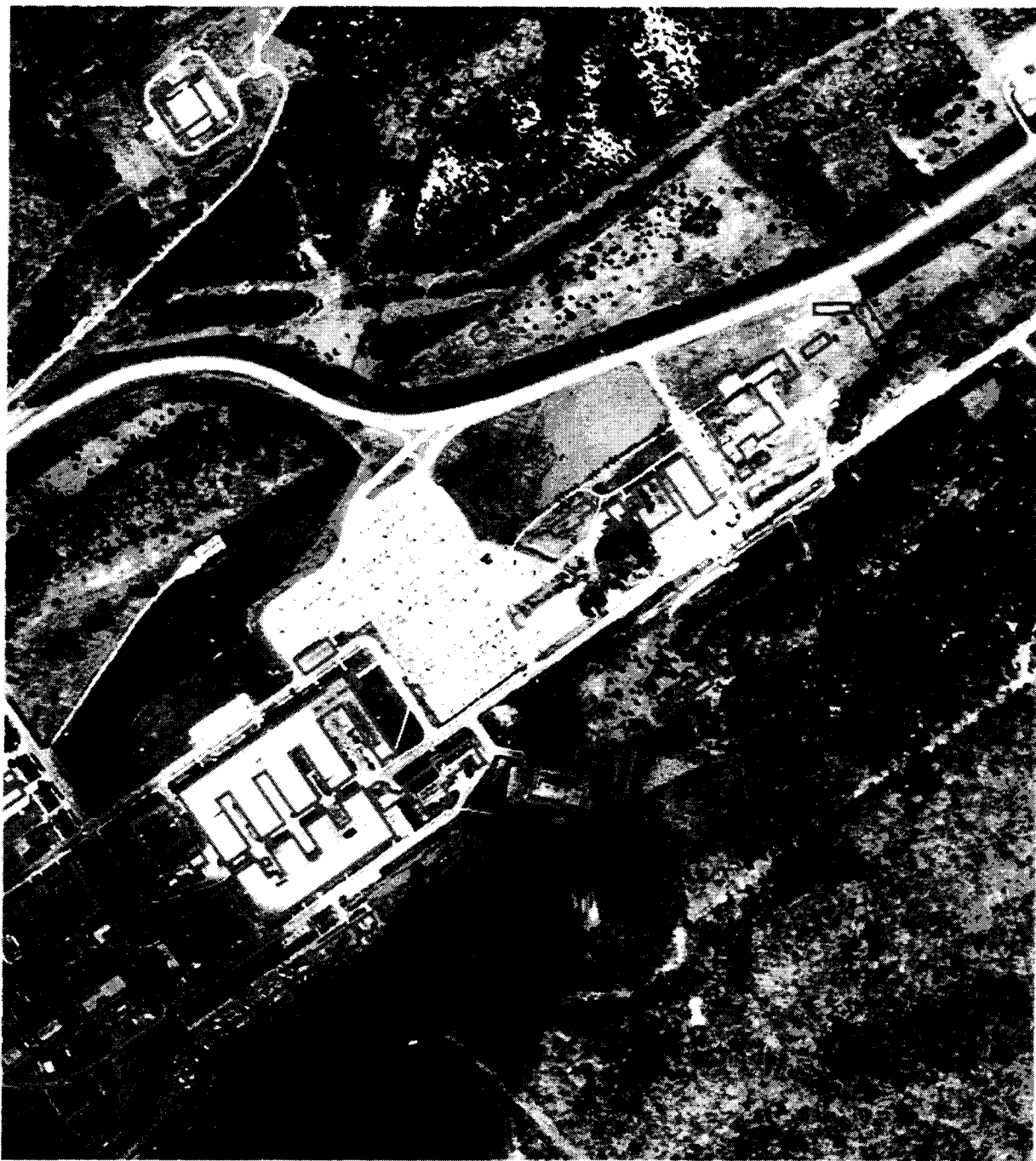


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Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



# **ORNL 4500 Complex 1974 Image with 1993 Buildings and Roads**

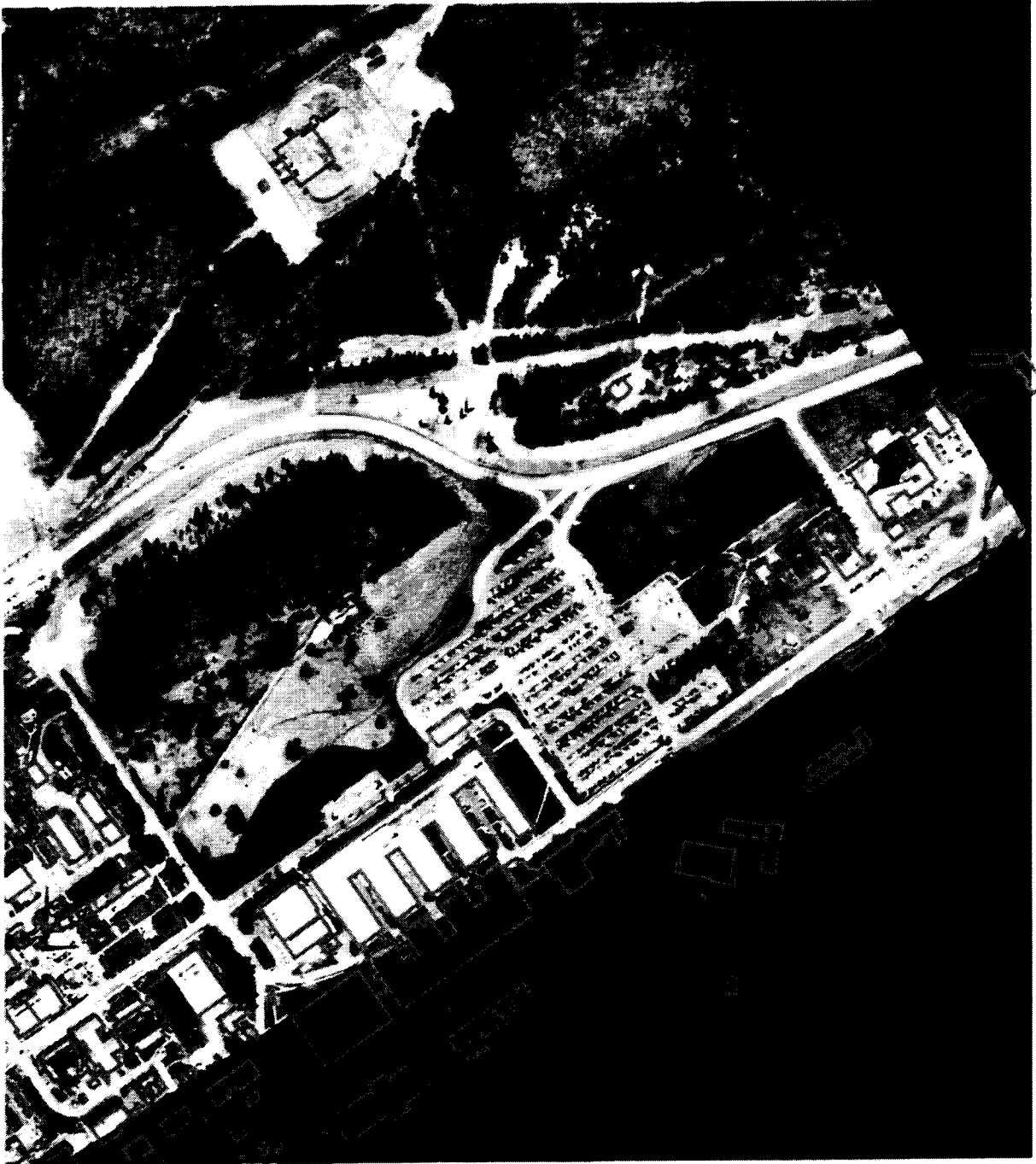


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Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



# ORNL 4500 Complex 1984 Image with 1993 Buildings and Roads

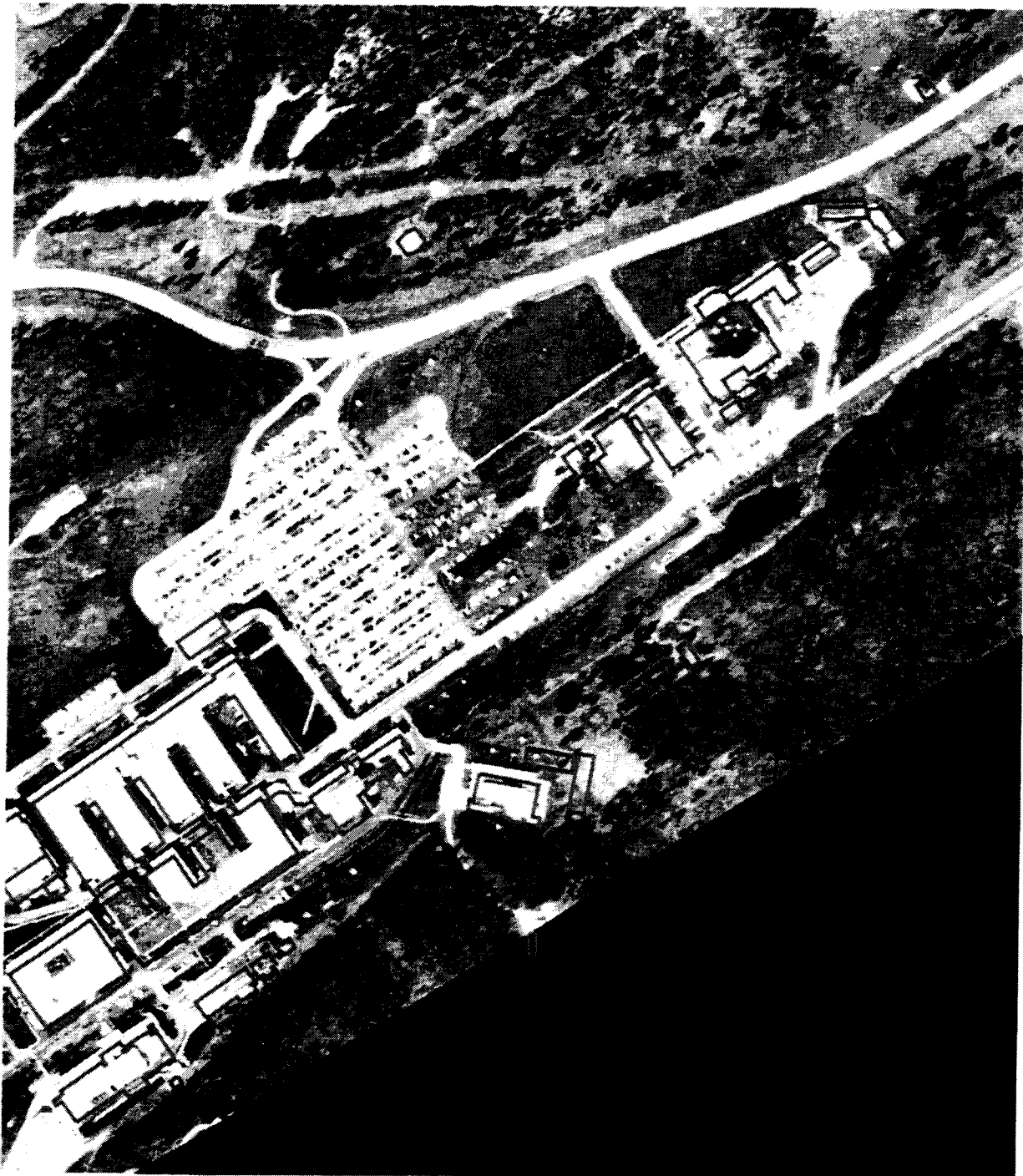


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Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



# ORNL 4500 Complex 1987 Image with 1993 Buildings and Roads

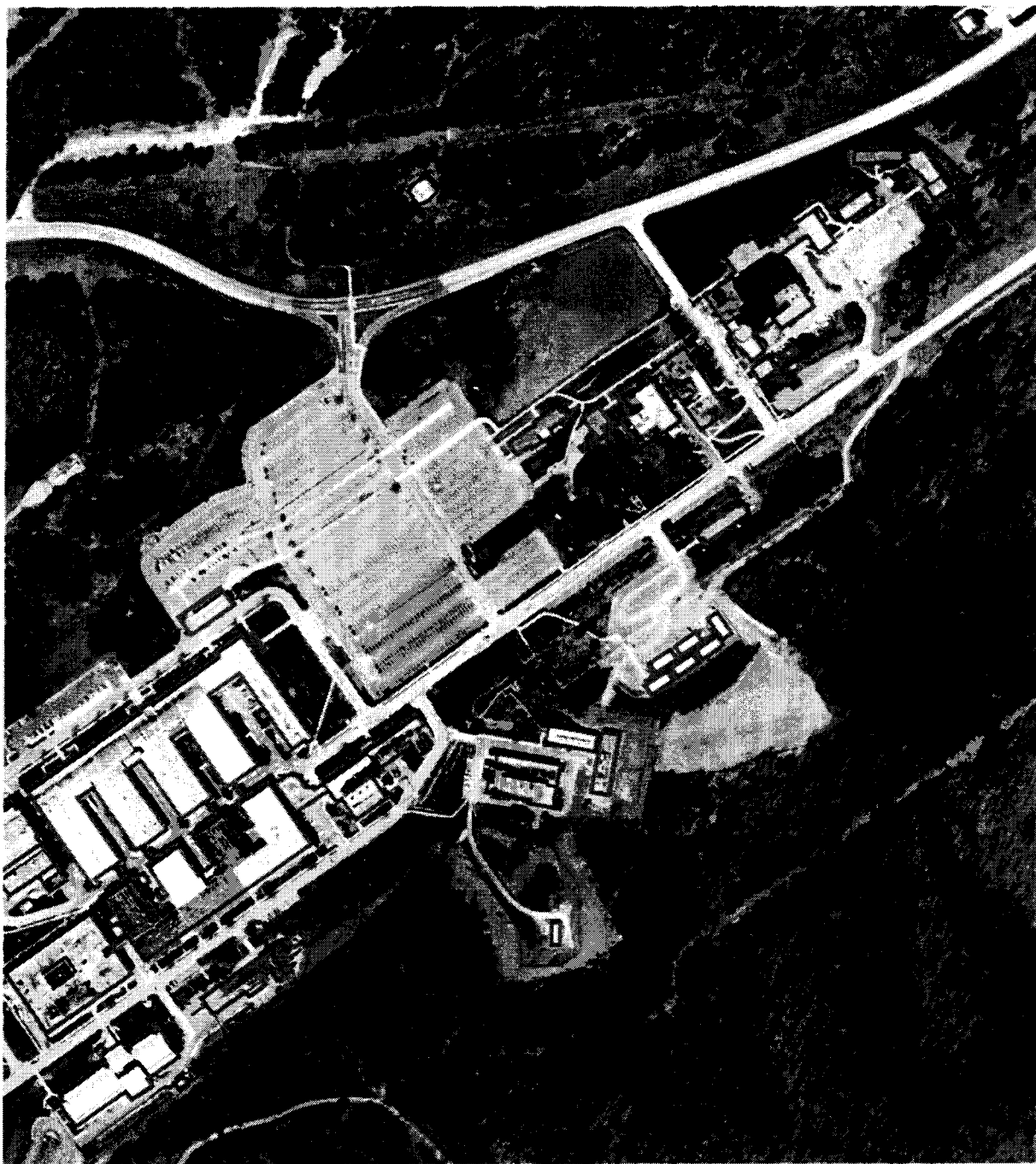


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Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



# ORNL 4500 Complex 1993 Image, Buildings, and Roads

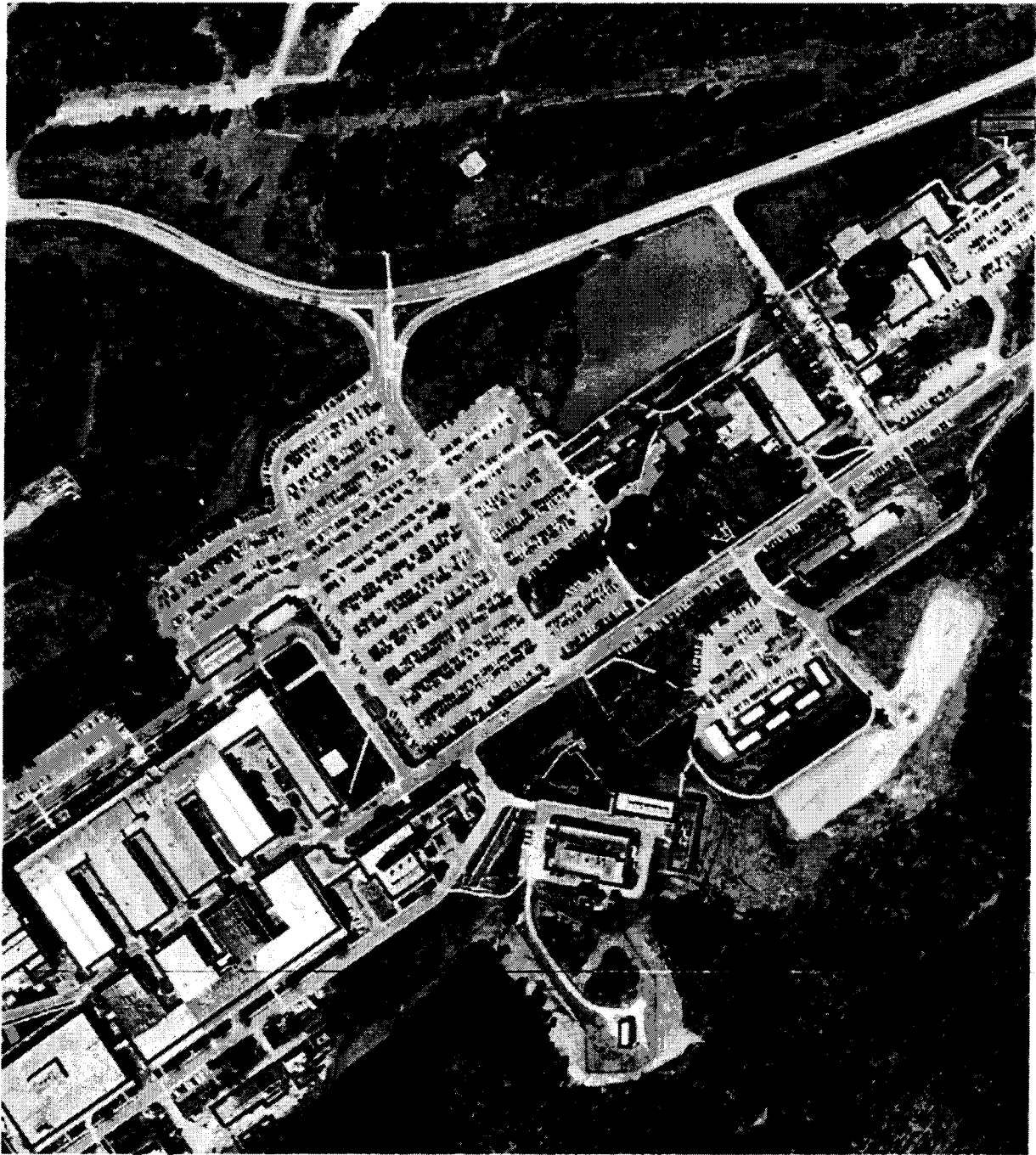


0 500 1000 1500 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



# ORNL 4500 Complex 1998 Image with 1993 Buildings, and Roads



0 500 1000 1500 Feet

Prepared by Geographic Information Science and Technology Group, ORNL  
August 10, 2000



#### Appendix D - Individuals Interviewed for Information on Hazardous Substance Activity

1. S. H. Stow, ORNL Ombudsman, August 25, 2000 - Photographs and history of ORNL
2. J. D. Story, ORNL EPWSD, Field Interface, September 18, 2000 - Releases of ethylene glycol
3. C. K. Valentine, ORNL EPWSD, Water Programs Group, August 29, 2000 - Release of chlorine from water main break
4. A. S. Dixon, ORNL EPWSD, Solid and Hazardous Waste Group, July 28, 2000 and September 15, 2000 - RCRA and used oil storage areas in buildings considered adjacent property
5. G. E. Anderson, ORNL EPSWD, DOE Compliance Programs Group, on or about August 15, 2000 - Operational Awareness Records for Building 5500
6. R. F. Utrera, ORNL Office of Radiation Protection, August 31, 2000 - radiological source control database
7. J. E. (Francis) Werner, ORNL Office of Radiation Protection, July 26, 2000 - radiological survey data
8. S. B. Kennedy, EPO, ORNL Physics Division, August 29, 2000 - Building 5500 and Flight Path Stations
9. B. T. Hackworth, EPO, ORNL Science Education Division, August 23, 2000 - Building 5500
10. D. R. Henderson, EPO, ORNL Engineering Division, August 17, 2000 - Building 1000
11. B. A. Riley, EPO, ORNL Computer Sciences and Mathematics Division, August 18, 2000 - Building 6012
12. P. J. Richardson, EPO, ORNL Laboratory Protection Division, August 18, 2000 - Buildings 5506, 5553, and 5002
13. F. K. Edwards, EPO, ORNL Metals and Ceramics Division, August 29, 2000 - Building 5500

14. G. H. Miller, EPO, ORNL Life Sciences Division, September 02, 2000 - Building 5500
15. S. A. Hamley, RCO, ORNL Metals and Ceramics Division, September 02, 2000 - Building 5500
16. R. L. Auble, RCO, ORNL Physics Division, September 02, 2000 - Building 5500
17. B. Giles, City of Oak Ridge, September 07, 2000 - Request for information
18. R. Young, State of Tennessee, Tennessee Department of Environment and Conservation, September 21, 2000 - Request for information
19. E. Erwin, Tennessee Valley Authority, prior to September 05, 2000 - Request for information
20. P. Sweet, U. S. Army Corps of Engineers, prior to September 05, 2000 - Request for information